

AMENDMENTS TO THE CLAIMS

1. (Original) A method of determining network routing information based on shared risk link group information in a data communications network comprising nodes and links, the method comprising the computer-implemented steps of:
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups to which the failed link belongs;
accessing a link state database that stores information defining one or more links and adjacent nodes;
determining whether each link defined in the link state database is in the one or more shared risk link groups; and
removing an adjacent node from the link state database for any link that is determined to be in one of the shared risk link groups.
2. (Original) A method as recited in claim 1, performed as part of determining a shortest path through the network from a source to a destination.
3. (Original) A method as recited in claim 1, further comprising the steps of:
determining whether a graph of the data communications network based on the link state database is disconnected; and
if the graph is disconnected, then determining a new shortest path through the network to a destination network element without removing any link that has not been explicitly reported by another network element as failed.
4. (Original) A method according to any of Claim 1, 2, or 3, further comprising the steps of:
initiating a timer prior to the accessing step;
when the timer expires, determining a new shortest path through the network to a destination network element.

5. (Original) A method of determining network routing information based on shared risk link group information in a data communications network comprising nodes and links, the method comprising the steps of:
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups S to which the failed link belongs;
during computation of a shortest path first tree, after having added a node X to a path,
adding each neighbor N_i of node X to a tentative tree if and only if a link (X, N_i) does not belong to S.
6. (Original) A method of determining network routing information based on shared risk link group information in a data communications network comprising nodes and links, the method comprising the steps of:
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups to which the failed link belongs;
initiating computation of a shortest path first tree;
adding a first node to a path as part of the computation;
determining a set of neighbors of the first node; and
adding each neighbor node to a tentative tree if and only if a link between the first node and the neighbor node does not belong to one of the shared risk link groups.
7. (Original) A method as recited in claim 6, further comprising the steps of:
determining whether a graph representing the data communications network is disconnected; and
if the graph is disconnected, then determining a new shortest path through the network to a destination network element without removing any link that has not been explicitly reported by another network element as failed.
8. (Original) A method according to any of Claim 6 or 7, further comprising the steps of:
initiating a timer prior to the accessing step;

when the timer expires, determining a new shortest path through the network to a destination network element.

9. (Currently amended) A computer readable medium ~~comprising~~ storing one or more sequences of instructions for determining network routing information based on shared risk link group information in a data communications network comprising nodes and links in a data communications network having as elements links and nodes, which instructions, when executed by one or more processors, cause the one or more processors to perform ~~the steps of the method of any of Claims 1, 2, or 3~~
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups to which the failed link belongs;
accessing a link state database that stores information defining one or more links and adjacent nodes;
determining whether each link defined in the link state database is in the one or more shared risk link groups; and
removing an adjacent node from the link state database for any link that is determined to be in one of the shared risk link groups.
10. (Currently amended) A computer readable medium ~~comprising~~ storing one or more sequences of instructions for determining network routing information based on shared risk link group information in a data communications network comprising nodes and links in a data communications network having as elements links and nodes, which instructions, when executed by one or more processors, cause the one or more processors to perform ~~the steps of the method of any of Claims 5, 6, or 7~~
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups S to which the failed link belongs;
during computation of a shortest path first tree, after having added a node X to a path,
adding each neighbor Ni of node X to a tentative tree if and only if a link (X, Ni) does not belong to S.

11. (Original) An apparatus for generating routing information based on shared risk link group information in a data communications network having as elements nodes and links, comprising:
 - means for receiving information identifying a failed link in the network;
 - means for receiving information defining one or more shared risk link groups to which the failed link belongs;
 - means for accessing a link state database that stores information defining one or more links and adjacent nodes;
 - means for determining whether each link defined in the link state database is in the one or more shared risk link groups; and
 - means for removing an adjacent node from the link state database for any link that is determined to be in one of the shared risk link groups.
12. (Original) An apparatus as recited in claim 11, implemented as part of a means for determining a shortest path through the network from a source to a destination.
13. (Original) An apparatus as recited in claim 11, further comprising:
 - means for determining whether a graph of the data communications network based on the link state database is disconnected; and
 - means for determining, if the graph is disconnected, a new shortest path through the network to a destination network element without removing any link that has not been explicitly reported by another network element as failed.
14. (Original) An apparatus according to any of Claims 11, 12, or 13, further comprising:
 - means for initiating a timer prior to the accessing step;
 - means for determining, when the timer expires, a new shortest path through the network to a destination network element.
15. (Original) An apparatus for determining network routing information based on shared risk link group information in a data communications network comprising nodes and links, the apparatus comprising:
 - means for receiving information identifying a failed link in the network;

means for receiving information defining one or more shared risk link groups S to which the failed link belongs;

means for adding, during computation of a shortest path first tree, after having added a node X to a path, each neighbor N_i of node X to a tentative tree if and only if a link (X, N_i) does not belong to S.

16. (Original) An apparatus for determining network routing information based on shared risk link group information in a data communications network comprising nodes and links, the apparatus comprising:

means for receiving information identifying a failed link in the network;

means for receiving information defining one or more shared risk link groups to which the failed link belongs;

means for initiating computation of a shortest path first tree;

means for adding a first node to a path as part of the computation;

means for determining a set of neighbors of the first node; and

means for adding each neighbor node to a tentative tree if and only if a link between the first node and the neighbor node does not belong to one of the shared risk link groups.

17. (Original) An apparatus as recited in claim 16, further comprising:

means for determining whether a graph representing the data communications network is disconnected; and

means for determining, if the graph is disconnected, a new shortest path through the network to a destination network element without removing any link that has not been explicitly reported by another network element as failed.

18. (Original) An apparatus according to any of Claims 16 or 17, further comprising:

means for initiating a timer prior to the accessing step;

means for determining, when the timer expires, a new shortest path through the network to a destination network element.

19. (Currently amended) An apparatus for generating routing information in a data communications network having as elements links and nodes, the apparatus comprising: one or more processors;
a network interface communicatively coupled to the processor and configured to communicate one or more packet flows among the processor and a network; and
a computer readable medium ~~comprising~~ storing one or more sequences of instructions for generating routing information which instructions, when executed by one or more processors, cause the one or more processors to perform ~~the steps of the method of any of claims 1, 2, or 3;~~
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups to which the failed link belongs;
accessing a link state database that stores information defining one or more links and adjacent nodes;
determining whether each link defined in the link state database is in the one or more shared risk link groups; and
removing an adjacent node from the link state database for any link that is determined to be in one of the shared risk link groups.
20. (Currently amended) An apparatus for generating routing information in a data communications network having as elements links and nodes, the apparatus comprising: one or more processors;
a network interface communicatively coupled to the processor and configured to communicate one or more packet flows among the processor and a network; and
a computer readable medium ~~comprising~~ storing one or more sequences of instructions for generating routing information which instructions, when executed by one or more processors, cause the one or more processors to perform ~~the steps of the method of any of claims 5, 6, or 7~~
receiving information identifying a failed link in the network;
receiving information defining one or more shared risk link groups S to which the failed link belongs;

during computation of a shortest path first tree, after having added a node X to a path,
adding each neighbor N_i of node X to a tentative tree if and only if a link (X, N_i)
does not belong to S.